

Garbage, Garbage Everywhere!

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Estimated Time: 1 period for initial lesson
24 hours for trash collection
1 semester for composting

Grade Levels: 9-12

Purpose: In order to get students to see that they can do simple things to help the environment, a study of the relationship between trash/garbage and soil will be undertaken.

National Geography Standards Addressed:

7. The physical processes that shape the patterns of Earth's surface.
8. The characteristics and spatial distribution of ecosystems on Earth's surface.
14. How human actions modify the physical environment
18. To apply geography to interpret the present and plan for the future.

Indiana Academic Standards Addressed:

Geography and History of the World

Standard 9 — Human and Environmental Interactions: Resources, Hazards and Health

Standard 12 — Global Change

Objectives: Upon completion of the lesson/activity, the students should be able to

1. explain how soil is made,
2. identify current local and global environmental issues, and
3. propose solutions to help deal with the discussed problems.

Materials Required:

- 10 gallon plastic bin with holes drilled in lid for air circulation
- Red worms
- Water
- Garbage--coffee grounds, vegetables, fruits, eggshells--collected by the students
- Bedding, such as shredded newspaper
- Trash bags

Procedures:

Day 1

1. Pre-Lab Activity: Ask students to think about garbage...what types of things do they throw away? Ask them to jot responses down in their GeoJournals. Also ask students to estimate how much garbage they think that they throw away in a day.
2. Homework: Give each student a trash bag and ask them to carry their garbage around with them for 24 hours. That is, they are to put in their bags anything that they would put into the garbage can. Bags are to be brought in to class the next day for examination. Also, ask for volunteers to bring in food scraps... coffee grounds, vegetables, fruits, eggshells for tomorrow's activity.

Day 2

3. Discuss the previous day's responses in class and share the treasures in the garbage bags. Identify who recycles and/or composts based on the contents of their bags.
4. Discuss the effects of garbage on the environment and the stresses on landfills...ask students to think about what we can do about this problem to help the situation. Have students research to topic of landfills at the local level – where are their communities landfills located, why are they there, what materials go into the landfill, is recycling mandatory, where are the recycling centers located, is an incinerator available to their community...

5. Ask what does soil have in common with trash? Discuss soil composition and composting in relation to recycling.
6. Have students construct a worm bin:
 - have students shred the newspaper and place it in the prepared bin
 - pour enough water on the newspaper to dampen it...it should feel like a wrung out sponge
 - add worms
 - feed the worms
 - cover bins and add food or turn material as needed
 - have students continually observe the composting process
7. Students will monitor their worm bin during the year logging entries (note changes, temperature, humidity, light conditions, additions, and anything else they feel is pertinent). At the end of the semester/year, utilize any soil that may have developed to fill planters and grow vegetables or flowers.

Assessment:

Ask students to explain how composting helps alleviate the problems caused by waste removal and landfills. Also ask them to explain other benefits of composting.

Extension Activities:

- Ask permission from the Administration to compost outside and use compost to start a school garden.
- Have the students multiply their personal 24-hour trash production to one year. Apply this statistic to their families and to the school. Discuss. Take some form of action to reduce trash production.